REMARKS

By this Amendment, Claims 1, 6-12, 15-18, 23, 25, 26, 30, 33, and 37 are amended, Claims 2-3, 13, 14, 19-22, 24, 27-29, 31, 32, 34-36, and 38-43 are canceled, and no new claims are added. Claims 4 and 5 remain canceled.

The Examiner has rejected Claims 1- 3, 6-7, 9, 23, 27-29, and 31-33 under 35 U.S.C. 103(a) as being unpatentable by Angeopoulos et al (U. S. Patent: 6316167, here after 167).

The Examiner has rejected Claim 1 stating that: "167 teaches, a method for depositing a material on a substrate, comprises, placing a substrate in a chamber having a plasma source and on a substrate holder [column 91ine 65].167 teaches depositing the ARC layer on the substrate, 167 teaches the film is R:C:O:X where the R: is silicon and X is not present (abstract lines 4-8)[column 9 lines 65-67], for example SiOC or SiON wherein the precursor is provided to the chamber [Colum 10 lies 4-10]. 167 does not teach modifying the surface of the film, however 167 teaches preventing the formation of a photoresist foot (poisoning) during a subsequent lithographic operation, by deposition a layer of RCHX film on the surface of the TERA layer[column 10 lines 45-65]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of film deposition that 167 teaches and have a layer of RCHX deposited on top of it to prevent resist poisoning effect, Because 167 teaches the RCHX films are compatible with resist. In fact it is inherent by depositing the RCHX layer on RCOX layer the top layer of the deposited TERA layer is modified. 167 also teaches the RCHX films obtain by vapor deposition process [column 13 lines 11-13, and claim 2], and further teaches the vapor deposition is assisted with high density plasma [claim 4]. It is also inherent that for depositing the RCHX film (containing hydrogen), a hydrogen containing gas has to be employed.

The Applicants have amended Claim 1 to more recite that their invention includes:

"A method for depositing a material on a substrate, the method comprising:

placing a substrate on a substrate holder in a chamber having a plasma source, wherein the plasma source comprises an RF source coupled to an upper electrode and the substrate holder comprises a bottom electrode coupled to a second RF source;

introducing first processing gases into the chamber using a shower plate assembly coupled to the chamber, wherein the first processing gases include a trimethylsilane (3MS) precursor and Helium (He) gas;

establishing an operating pressure in the chamber, the operating pressure being established at approximately 5 Torr,

depositing a bottom layer portion of a Tunable Etch Resistant ARC (TERA) layer on the substrate, wherein the first processing gases are provided to the chamber, and the RF source is operated at a power level of approximately 800 watts, the second RF source is operated at a power level of approximately 30 watts, the shower plate assembly having a center region, an edge region, and a sub region configured to establish a first flow rate for the 3MS precursor between approximately 0 sccm and approximately 350 sccm and to establish another first flow rate for the He gas between approximately 0 sccm and approximately 600 sccm when the bottom layer portion is deposited;

introducing second processing gasses into the chamber using the shower plate assembly, the second processing gases including the 3MS precursor, CO_2 gas, and the He gas;

depositing a top layer portion of the TERA layer on the substrate, wherein the second processing gases are provided to the chamber, and the RF source is operated at a power level of approximately 400 watts, the center region, the edge region, and the sub region being further configured to establish a second flow rate for the 3MS precursor between approximately 0 sccm and approximately 75 sccm to establish a flow rate for the CO_2 gas between approximately 0 sccm and approximately 50 sccm and to establish a second flow rate for the He gas between approximately 0 sccm and approximately 600 sccm while depositing the top layer portion;

performing at least one purging process, wherein the RF source is operated at approximately zero watts, an ESC voltage is approximately 0 volts, and the center

region, the edge region, and the sub region are further configured to establish a third flow rate for the He gas between approximately 0 sccm and approximately 300 sccm;

performing an evacuation process, wherein the RF source is operated at approximately zero watts, and the operating pressure is established below approximately 2 Torr;

introducing third processing gases into the chamber using the shower head assembly, the third processing gases including CO_2 gas, and He gas;

establishing a post-processing pressure in the chamber, the post-processing pressure being established at approximately 2 Torr,

establishing a post-processing plasma in the chamber, wherein the third processing gases are provided to the chamber the RF source is operated at a power level of approximately 30 watts, and the center region, the edge region, and the sub region are further configured to establish a fourth flow rate for the CO_2 gas between approximately 0 sccm and approximately 40 sccm and to establish another fourth flow rate for the He gas between approximately 0 sccm and approximately 600 sccm during the post-processing plasma;

modifying a top surface of the top layer portion of the deposited TERA layer by exposing the top layer portion of the deposited TERA layer to the post-processing plasma during the establishing step;

performing a pin up process while the post-processing plasma is established, wherein the substrate is lifted off the substrate holder using one or more lift pins; and

further modifying the top surface of the top layer portion of the deposited TERA layer by exposing the top surface of the top layer portion of the deposited TERA layer to the post-processing plasma during the pin up process step, wherein the modified top surface is created on the top surface of the top layer portion of the deposited TERA layer to prevent a photoresist problem during a subsequent lithographic operation."

The Applicants believe that the cited art does not teach a method for depositing a material on a substrate as claimed by the Applicants in the amended Claim 1, and therefore the Applicants believe that amended claim 1 is patentable over the cited art.

The Examiner has rejected Claim 2 stating that: "167 teaches the limitation of claim 1 and Lee.167 teaches the surface treatment is for avoiding or minimizing the resist poisoning[column 10 lines 45-55]. 167 teaches since the application is to fabricate IC's and in nm size, i. e. in 167 [column 1 lines 1-3, column 1 lines 29-33], therefore the footing features should be about nm and are very small."

The Examiner has rejected Claim 3 stating that: "167 teaches forming plurality of photoresist features on the photoresist compatible surface and she further teaches the feature comprises a well defined rectangle profile [fig. 10]."

The Applicants have canceled Claims 2 and 3 rendering the rejection of Claims 2 and 3 moot.

The Examiner has rejected Claim 6 stating that: "167 teaches the limitation of claim 1 as discussed above. 167 also teaches using hydrogen containing gas to deposit RCHX(SiCOH) layer[column 9 lines 20-21] with rate of 30 sccm. Although 167 does not teach the gas is H2, however it is inherent that he precursor would decompose as the result of the plasma and create the hydrogen gas prior to dissociation to atoms and radicals."

The Examiner has rejected Claim 7 stating that: "167 teaches the limitation of claim 1 and 167 teaches forming RCHX film (SiCOH), flowing an inert gas (argon) with flow rate of 30 sccm [column 9 lines 21-22]."

The Applicants have amended Claims 1, 6, and 7 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejections of amended Claims 6 and 7 should be withdrawn because amended Claims 6 and 7 are dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claim 9 stating that: "167 teaches the limitation of claim 1 and 167 also teaches the thickness of the RCHX film is 2400 A(column 13 line 25]. Therefore the life time of the plasma (for deposition the RCHX) layer depends on the growth rate of the layer and for example with an ordinary growth rate of 1A/min, the growth time to get this layer is 40 sec which is in claimed range."

The Examiner has rejected Claim 23 stating that: "167 teaches the limitation of claim 1 and 167 further teaches depositing a top portion of the TERA layer, wherein the top portion comprises a material having a refractive index of 1.9 and extinction coefficient of 0.25, when measured at a wavelength of 248 nm [column 12 line 61]."

The Applicants have amended Claims 1, 9, and 23 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejections of amended Claims 9 and 23 should be withdrawn because amended Claims 9 and 23 are dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claims 27 and 28 stating that: "167 and Lee teaches limitation of claim 23 and 167 further teaches the process gas comprises silicon, carbon, oxygen and argon containing gas [column 9 line 21]."

The Examiner has rejected Claim 29 stating that: "167 teaches the precursor flowed with the rate of 10 sccm [column 8 line 59] and the inert flowed with the rate of 30sccm [column 9 line 22]."

The Examiner has rejected Claim 31 stating that: "167 teaches the limitation of claim 27 and 167 further teaches the inert gas to be argon [column 91ine 21]."

The Applicants have canceled Claims 27, 28, 29, and 31 rendering the rejection of Claims 27, 28, 29, and 31 moot.

The Examiner has rejected Claims 32-33 stating that: "167 teaches the limitation of claim 1 and 167 further teaches controlling the substrate temperature at 60°C [column 8 line 62]."

The Applicants have canceled Claim 32 rendering the rejection of Claim 32 moot.

The Applicants have amended Claims 1 and 33 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claim 33 should be withdrawn because amended Claim 33 is dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claims 10, 15-17, 19-21 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167),

further in view of Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee.

The Examiner has rejected Claim 10 stating that: "167 teaches the limitation of claim 1 as discussed above. 167 does not teach the refractive index of SiON or SiOC film. Lee teaches a method of making pattern on an TERA(ARC) layer by lithography and Lee further teaches to deposit SiOC or SiON as an ARC layer [page G58, 4th paragraph]. Lee also teaches the refractive index of the film is 1.8-22 and the extinction coefficient is 0.6-0.7 at 193 nm wavelength [page G58, last paragraph]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 teaches where the SiON film has refractive index and extinction coefficient as Lee teaches, because Lee teaches it is suitable to have SiON film with these characteristics."

The Applicants have amended Claims 1 and 10 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claim 10 should be withdrawn because amended Claim 10 is dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claims 15-17 stating that: "167 and Lee teach the limitation of claim 10 as discussed above and Lee teaches the process gas comprises silicon containing and carbon containing precursor with flow rate of 200-500 sccm[3MS, page G58, paragraph 5 lines 4-6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where the SiOC film is deposited by 3MS as Lee teaches, because Lee teaches it is suitable to deposit SiOC film with 3MS gas.

The Applicants have amended Claims 1 and 15-17 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claims 15-17 should be withdrawn because amended Claims 15-17 are dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claim 19 stating that: "167 and Lee teach the limitation of claim 15 as discussed above and Lee teaches the process gas comprising an

inert gas such as helium[page G58, paragrapg5 lines 4-6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where the SiOC film is deposited by 3MS and He as Lee teaches, because Lee teaches it is suitable to deposit SiOC film with 3MS gas."

The Examiner has rejected Claims 20-21 stating that: "167 and Lee teach the limitation of claim 10 as discussed above and Lee teaches the chamber pressure is 7 torr [page G58 paragraph 5, line 4]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where chamber pressure is 7 torr because Lee teaches it is suitable to chamber pressure to deposit SiOC."

The Applicants have canceled Claims 19-21 rendering the rejection of Claims 19-21 moot.

The Examiner has rejected Claim 18 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee, as applied to claim 15 above, further in view of Hongning Yang et al (U. S. Patent: 6410462, here after 462)."

The Examiner has rejected Claim 18 stating that: "167 and Lee teach the limitation of claim 15. They do not teach using methane (CH4) for deposition SiOC film. 462 teaches a method of deposition SiCO films [abstract lines 1-3], where the carbon source is methane [abstract and column 4 lines 57-63]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where the carbon source gas as methane is used along with other gases, because 462 teaches it is suitable to deposit SiOC with methane gas."

The Applicants have amended Claims 1 and 18 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claim 18 should be

withdrawn because amended Claim 18 is dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claims 8 and 24 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee, further in view of Seon Mee Cho et al (U. S. Patent Application: 2003/0003768, here after Cho).

The Examiner has rejected Claims 8 and 24 stating that: "167 and Lee teach the limitation of claim 1 as discussed above. 167 teaches a method of deposition a layer (comprises Si, C, O, H) [column 4 lines 12-24] on a substrate which meets the limitation of claims 1, 10 and 24 as discussed above. 167 does not specifically teach the plasma source has a RF source. Cho teaches a method of deposition of organosilicate layers [0016 lines 1-4] wherein the plasma source (11) has a RF source in a power range of 10 watts/cm2 to about 200 watt/cm^2 [0038, lines 3-5] frequency of 13.56 MHz [0037 lines 5-6 and 11-15]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition in which the plasma source has a RF has the power of 1 watt/cm^2 to about 500 watts/cm^2, 13.56 MHz frequency, because Cho teaches it is suitable to deposit TERA layer with having RF plasma source."

The Applicants have amended Claims 1 and 8 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claim 8 should be withdrawn because amended Claim 8 is dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Applicants have canceled Claim 24 rendering the rejection of Claim 24 moot.

The Examiner has rejected Claims 11-12 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here

after Lee as applied to claim 10 above, further in view of James N. Herron et al (U. S. Patent: 6108463, here after 463).

The Examiner has rejected Claim 11 stating that: "167 and Lee teach the limitation of claim 10. They do not teach the deposition rate of SiON layer. James teach a method of depositing SiON where the growth rate of the layer is 590A/min [column 16 lines 66-67]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer as 167 and Lee teaches where the deposition rate of SiON is 590A/min as Jin teaches, because Jin teaches it is suitable deposition rate for SiON."

The Applicants have amended Claims 1 and 11 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claim 11 should be withdrawn because amended Claim 11 is dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claim 12 stating that: "167 and Lee teach the limitation of claim 10. In claim 11 rejection the deposition rate for depositing SiON is 590 A/min and since Lee teaches the thickness of the SiON layer is about 200-300 A[fig. 3], therefore the deposition time is less than 180 sec (3 minutes)."

The Applicants have amended Claims 1 and 12 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claim 12 should be withdrawn because amended Claim 12 is dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claims 13-14 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee as applied to claim 10 above, further in view of Been Yin Jin et al a(U. S. Patent: 5883001, here after Jin).

The Examiner has rejected Claims 13-14 stating that: "167 and Lee teach the limitation of claim 10 as discussed above. 167 does not teach depositing parameters for depositing SiON. Jin teaches a method of deposition SiON where the RF source is 350

Hz or Watts [table 1 in column 8]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer as 167 and Lee teaches where the RF source is taught by Jin, because Jin teaches it is suitable to deposit SiON layer with RF power of 350Hz(Watt)."

The Applicants have canceled Claims 13-14 rendering the rejection of Claims 13-14 moot.

The Examiner has rejected Claim 22 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee as applied to claim 10 above, further in view of Craig A. Roderick (U. S. Patent: 6074488, here after 488).

The Examiner has rejected Claim 22 stating that: "167 teaches the limitation of claim 10 as discussed above. They do not teach the DC voltage is applied to an electrostatic chuck. 488 teaches a method of plasma deposition [column 10 lines 42-46] where a DC voltage applied to the electrostatic chuck [column 2 lines 58-60]. He further teaches the DC voltage is about 200-2000 Volts [claim 32]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of plasma deposition wherein the DC voltage to an electrostatic chuck of about 200-2000 Volts to hold the substrate and generate plasma, because 488 teaches it is desirable to deposit material on a surface by such a plasma processing to eliminate extraneous components [column 2, lines 55-65]."

The Applicants have canceled Claims 13, 14, and 22 rendering the rejection of Claims 13, 14, and 22 moot.

The Examiner has rejected Claims 25-26 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Houng T. Nguyen et al (U. S. Patent application: 2003/0017694, here after 694).

The Examiner has rejected Claim 25 stating that: "167 teaches the limitation of claim 10 as discussed above. 167 teaches a method of deposition a TERA layer (comprises Si, C, 0, H) [column 4 lines 12-24] on a substrate. 167 does not specifically teach the deposit rate of the bottom portion of the TERA layer is about 100-10000 A/ min. 694 teaches a method of deposition of organosilicate layers [abstract lines 1-2] wherein the deposit rate of the organosilicate material is in the range of 1000-20000 N min [0055 lines 12-14]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the deposition rate of the TERA layer is 100-10000 N min, because 694 teaches it is suitable to deposit TERA layer with these deposition rate."

The Examiner has rejected Claim 26 stating that: "167 teaches the limitation of claim 10 as discussed above. 167 teaches a method of deposition a TERA layer (comprises Si, C, 0, H) [column 4 lines 12-24] on a substrate. 167 does not specifically teach the deposition time for depositing the bottom layer is between 5-18 seconds. 694 teaches a method of deposition of organosilicate layers [abstract lines 1-2] wherein the deposit rate of the organosilicate material is 20000 N min [0055 lines 12-14]. He further teaches the thickness of the layer is about 3000 A [0057 lines 4]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the deposition time of the bottom TERA layer is about 9 sec, because 694 teaches within this time the thickness of the TERA layer is appropriate."

The Applicants have amended Claims 1, 25, and 26 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejections of amended Claims 25 and 26 should be withdrawn because amended Claims 25 and 26 are dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claim 30 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further

in view of A. Grill, Journal of Applied Physics, Vol. 93 (2003) 1785-1790, here after Grill.

The Examiner has rejected Claim 30 stating that: "167 teaches limitation of claim 27, as discussed above. 167 does not teach the precursor comprises TMCTS. Grill teaches a method for depositing SiCOH by PECVD when the precursor is TMCTS [column 2 line 4 and 27, page 1785] (mixing with inert gas (column 1 line 6 page 1786). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method for depositing SiCOH film via PECVD that 167 teaches when the precursor is TMCTS, because Grill teaches it is suitable to use TMCTS for depositing SiCOH film via PECVD process."

The Applicants have amended Claims 1 and 30 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claim 30 should be withdrawn because amended Claim 30 is dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claims 34-35 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Tae K. Won (U. S. Patent Application: 2003/0044621, here after Won).

The Examiner has rejected Claims 34-35 stating that: "167 teaches the limitation of claim 1 as discussed above. 167 does not teach controlling the chamber wall temperature. Won teaches a method of deposition of organosilicate layers [abstract lines 7-9] wherein where the chamber wall temperature is controlled [0051 lines11 to the end] in order to obtain uniform film [claim 2 lines 7-10], he further teaches the temperature is between 380-410 °c [claim 2 line 9-10]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which chamber wall temperature is controlled and is between 380-410 C, because Won teaches the deposited film will be uniform with controlling the chamber temperature between 380-410 C."

The Applicants have canceled Claims 34-35 rendering the rejection of Claims 34-35 moot.

The Examiner has rejected Claims 36-37 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Zheng Yuan (U. S. Application: 2002/0163028, here after Yuan).

The Examiner has rejected Claim 36 stating that: "167 teaches the limitation of claim 1 as discussed above. 167 further teaches a shower head assembly is coupled to the chamber [120 fig. 2 and 0027 lines 3-5]. 167 does not specifically teach the temperature of the showerhead. Yuan teaches a method for depositing film on a substrate [abstract lines 1-2, 0007 lines 1-4], where the temperature of showerhead is about 90-120 C [0040 lines 3-12], to enhance the reaction time between the species. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the showerhead temperature is controlled and is between 90-120 C, because Yuan teaches it enhance the reaction time between the species."

The Applicants have canceled Claim 36 rendering the rejection of Claim 36 moot.

The Examiner has rejected Claim 37 stating that: "167 and Yuan teach the limitation of claim 36 as discussed above. 167 teaches a shower head assembly is coupled to the chamber [120 fig. 2 and 0027 lines 3-5]. Yuan teaches a method for depositing film on a substrate [abstract lines 1-2, 0007 lines 1-4], where the temperature of showerhead is about 90-120 C [0040 lines 3-12], to enhance the reaction time between the species. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the showerhead temperature is controlled and is between 90-120 C, because Yuan teaches it enhance the reaction time between the species."

The Applicants have amended Claims 1 and 37 to more clearly recite the invention and believe the "35 U.S.C. 103(a)" rejection of amended Claim 37 should be withdrawn because amended Claim 37 is dependent from amended Claim 1, and the Applicants believe that amended Claim 1 is patentable over the cited art.

The Examiner has rejected Claim 38 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Enzo Carollo (U. S. Patent Application: 2004/0137169, here after Carollo).

The Examiner has rejected Claim 38 stating that: "167 teaches the limitation of claim 1, as discussed above. 167 does not teach rechecking the substrate while the post plasma processing is being created. Carollo teaches a method of plasma deposition of silicon nitride [abstract lines 1-3], where a layer of oxide will deposit after deposition of silicon nitride [0034]. He further teaches de-chucking the substrate while generating the post processing plasma (oxygen) [claim 10]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer that 167 teaches where de-chucking the substrate while the post plasma processing is generated, because Carollo teaches it is suitable to have the substrate de-chuck during the generation of post processing plasma."

The Applicants have canceled Claim 38 rendering the rejection of Claim 38 moot.

The Examiner has rejected Claims 40 and 43 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Yuan-Ko Hwang et al (U. S. Patent: 6238160, here after Hwang).

The Examiner has rejected Claims 40 and 43 stating that: "167 teaches the limitation of claim 1, as discussed above, 167 does not teach de-chucking the substrate after the post plasma processing is extinguished. Hwang teaches a method of transporting the electrostatically chucking wafers for plasma processing [column 2 lines 43-45] where the dechucking of the wafer happens after the plasma is extinguished [column 5 lines 61-65 and column 6 lines 1-3] to eliminate the negative charge from the wafer. He further teaches after that the lifter will raise the wafer [column 6 lines 3-6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 teaches where de-chucking the substrate is taught by Hwang and happens after the plasma processing is extinguished and lifting the substrate happens after the plasma processing is

extinguished, because Hwang teaches de-chucking the substrate helps to remove the negative charges on the substrate."

The Applicants have canceled Claims 40 and 43 rendering the rejection of Claims 40 and 43 moot.

The Examiner has rejected Claims 41-42 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Dan Maydan et al (U. S. Patent: 4951601, here after Maydan).

The Examiner has rejected Claims 41-42 stating that: "167 teaches the limitation of claim 1 as discussed above. 167 does not teach lifting the substrate before the post processing plasma is created. Maydan teaches a multichamber for processing the semiconductor wafers [abstract lines 1-2] comprises a robot, which load and unload the wafers [abstract lines 7 and 10-12]. Maydan further the multi-chambers can be used for different processing such as deposition sputtering, etching and ... [abstract lines 12-17]. Considering two deposition process in two different chambers, the wafer is lifted by a robot to transfer from the first chamber to the second chamber [column 7 lines 26-28], before the post plasma deposition created from the second chamber. The wafer also is transferred from one deposition chamber to another chamber while the plasma is being crated in the third chamber (claim 41 rejection). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 teaches where the deposition happened in Maydan's multiple processing chamber, because Maydan teaches the multiple processing chamber is suitable for processing the semiconductor wafers."

The Applicants have canceled Claims 41-42 rendering the rejection of Claims 41-42 moot.

The Examiner has rejected Claim 39 under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Enzo Carollo (U. S. Patent; 6953609, here after Carollo) and S. Avanzino, et al (U. S. Patent: 5776834, here after 834).

The Examiner has rejected Claim 39 stating that: "167 teaches the limitation of claim 1, as discussed above, 167 does not teach de-chucking the substrate before the post processing plasma is created. Carollo teaches a method of plasma deposition of silicon nitride [abstract lines 1-3], where the electrostatic chuck holds the substrate [0021 lines 1-3] and chucking and de-chucking of the substrate happens by applying or removing the direct voltage to the chuck [0021 lines 9-10]. 834 teaches a method of deposition insulating layers [title, column 2 lines 67-68 and column 6 lines 50-52] where the bias to the substrate [column 3 lines 37-38] is off [column 6 lines 63-65], which means the wafer is de-chucked, before the plasma is created. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 teaches where the substrate is de-chucked before the plasma is created, because 834 teaches it is suitable method for plasma deposition of materials."

The Applicants have canceled Claim 39 rendering the rejection of Claim 39 moot.

The Applicants believe that the Examiner's "35 U.S.C. 103(a)" rejections are based on improper hindsight reasoning and are improper because the Examiner is using "knowledge gleaned only from applicant's disclosure" to make the rejections. In re McLaughlin 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971).

Each of the Examiner's rejections having been addressed, the Applicants respectfully submit that Claims 1, 6-12, 15-18, 23, 25, 26, 30, 33, and 37 as amended are now in a condition for allowance. In light of the comments above, the Applicant respectfully requests the allowance of Claims 1, 6-12, 15-18, 23, 25, 26, 30, 33, and 37 as amended.

If the undersigned agent has overlooked a teaching in any of the cited references that is relevant to the Allowability of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is

encouraged to contact the undersigned agent at 480-539-2105 or by email at jim.klekotka@us.tel.com.

Charge Deposit Account

Please charge our Deposit Account No. 50-3451 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

/James Klekotka/

Date: 03/24/2009

James Klekotka
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